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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/042,531 | 01/09/2002 | Takanori Kudo | 2002US303 | 5536 |

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CLARIANT CORPORATION
ATTENTION; INDUSTRIAL PROPERTY DEPT.
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EXAMINER

ASHTON, ROSEMARY E

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| ART UNIT | PAPER NUMBER |
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1752

DATE MAILED: 07/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/042,531

Applicant(s)

KUDO ET AL.

Examiner

Rosemary E. Ashton

Art Unit

1752

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 April 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-11 is/are rejected.
- 7) ☒ Claim(s) 4 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

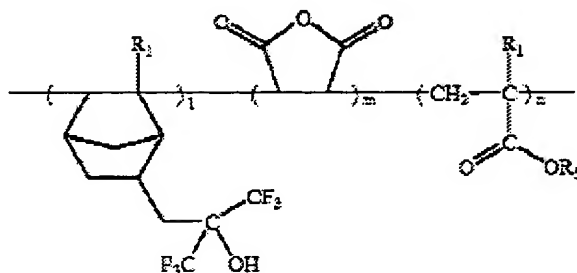
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-3,5-10 are rejected under 35 U.S.C. 102(e) as being anticipated by Nozaki et al. U.S. Patent Application Publication No. US 2002/0058197 A1.

Nozaki teaches a negative photoresist composition comprising an alkali soluble polymer, a vinyl ether protected with an acetal and a photoacid generator (PAG). The polymer meeting the limitations of claim 1 is shown in section 70 and below and has maleic anhydride as in claim

3.



As stated in section 244 below the vinyl ether compound protected with an acetal acts as a crosslinker to crosslink with the polymer.

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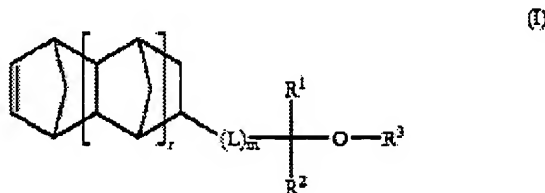
group, the alkali solubility is easily controlled. When the resist composition contains a vinyl ether structure protected with an acetal, in addition to the alkali-soluble polymer, the intermolecular or intramolecular etherification reaction can be employed and, therefore, a pattern can be formed by a change in polarity, along with a conventional crosslinking type, and high contrast and high definition can be easily obtained.

The composition is coated on a substrate, exposed to a wavelength less than 200 nm, heated and developed with tetramethylammonium hydroxide (sections 98-102, 107, 187).

3. Claims 1,2,4,6,8-10 are rejected under 35 U.S.C. 102(e) as being anticipated by Ito et al. U.S. Patent 6,548,219.

Ito teaches a negative photoresist composition comprising an fluoro norbornen polymer, an aminoplast crosslinker and a photoacid generator (PAG) (col. 3, lines 34-45; col. 11, lines 25-40; col. 12, lines 27-31 and lines 42-46). The polymer meeting the limitations of claim 1 has the monomer shown below in claim 1 of Ito. In claim 2 of Ito L is defined a (CH₂)_n with n=1-3 and in claim 6 both R₁ and R₂ are trifluoromethyl groups. Selection of R₃ as H leads to applicant's claimed monomer.

1. A copolymer prepared by copolymerization of a norbornene monomer having the structure (I)



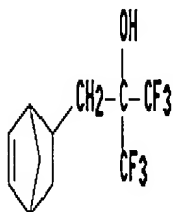
wherein m is zero or 1, r is zero or 1, L is an alkylene or oxyalkylene linking group, R¹ is linear or branched fluoroalkyl, R² is linear or branched alkyl or fluoroalkyl, and R³ is hydrogen, alkyl, —C(O)R, —CH₂—C(O)OR, C(O)OR, or Si(R)₃, wherein R is alkyl, and at least one additional monomer having the structure (II)

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The composition is coated on a substrate, exposed at 193 nm, heated and developed with TMAH (col. 12, lines 15-51).

4. Claims 1-3,5,8-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Cho et al. (SPIE).

Cho teaches a negative photoresist comprising a photoacid generator and a polymer comprising maleic anhydride and the norbornene monomer below. In section 3.3 on page 70 the composition is coated on a substrate, exposed at 193 nm, heated and developed with TMAH.



Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nozaki et al '197 cited above, Ito cited above or Cho cited above.

Nozaki '197, Ito and Cho each teach developing the resist with TMAH but do not teach there is a surfactant in the developer.

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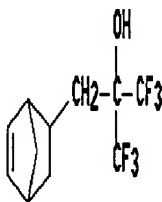
The use of surfactants in developers is well known in the art and the examiner takes official notice that using a TMAH developer having a surfactant is not novel and it would have been obvious to one of ordinary skill in the art to use a TMAH developer with a surfactant therein because the developers are known in the art. To support this statement the examiner refers to col. 1, lines 15-20 of Geyer U.S. patent no. 6,472,130 which states:

A conventional developer is based on a 2.5% strength solution of tetramethylammonium hydroxide (TMAH) in water, comprising a small amount of added surfactant. The

Allowable Subject Matter

7. Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter: The prior art does not teach a photoresist composition having a homopolymer of the formula below.



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Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. WO 67072 cited on applicant's IDS teaches fluorinated norbornenes for photoresist compositions, however they do not have the specific formula claimed which is $\text{Nb}-(\text{CH}_2)_n-\text{C}(\text{Rf})_2-\text{OH}$ but rather $\text{Nb}-\text{CH}_2-\text{O}-\text{CH}_2-\text{C}(\text{Rf})_2-\text{OH}$, $\text{Nb}-\text{O}-\text{CH}_2-\text{C}(\text{Rf})_2-\text{OH}$.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rosemary E. Ashton whose telephone number is 308-2057. The examiner works a flexible work schedule and can normally be reached M-F between 10:00 am and 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Janet Baxter can be reached on 308-2303. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



Rosemary E. Ashton
Primary Examiner
Art Unit 1752

rea
June 29, 2003

ROSEMARY ASHTON
PRIMARY EXAMINER